

STAGE AMPLIFIER SA-1000

Owner's Manual

Thank you, and congratulations on your choice of the Roland SA-1000 Stage Amplifier.



Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (p. 2), "USING THE UNIT SAFELY" (p. 3), and "IMPORTANT NOTES" (p. 5). These sections provide important information concerning the proper operation of the unit.

Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, Owner's manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.

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WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR		
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:


1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

For the U.K.

WARNING: THIS APPARATUS MUST BE EARTHED

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.
GREEN-AND-YELLOW: EARTH, BLUE: NEUTRAL, BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured GREEN-AND-YELLOW must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol  or coloured GREEN or GREEN-AND-YELLOW.

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK.

The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED.

USING THE UNIT SAFELY

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About ⚠ WARNING and ⚠ CAUTION Notices

⚠ WARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.
⚠ CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly. * Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.

About the Symbols

	The ⚠ symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.
	The ⓧ symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled.
	The ⚡ symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the power-cord plug must be unplugged from the outlet.

ALWAYS OBSERVE THE FOLLOWING

⚠ WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.

- Connect mains plug of this model to a mains socket outlet with a protective earthing connection.

- Do not open or perform any internal modifications on the unit.

- Do not attempt to repair the unit, or replace parts within it (except when this manual provides specific instructions directing you to do so). Refer all servicing to your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page.

- Never use or store the unit in places that are:
 - Subject to temperature extremes (e.g., direct sunlight in an enclosed vehicle, near a heating duct, on top of heat-generating equipment); or are
 - Damp (e.g., baths, washrooms, on wet floors); or are
 - Humid; or are
 - Exposed to rain; or are
 - Dusty; or are
 - Subject to high levels of vibration.

- Make sure you always have the unit placed so it is level and sure to remain stable. Never place it on stands that could wobble, or on inclined surfaces.

- The unit should be connected to a power supply only of the type described in the operating instructions, or as marked on the rear side of unit.

⚠ WARNING







- Do not excessively twist or bend the power cord, nor place heavy objects on it. Doing so can damage the cord, producing severed elements and short circuits. Damaged cords are fire and shock hazards!

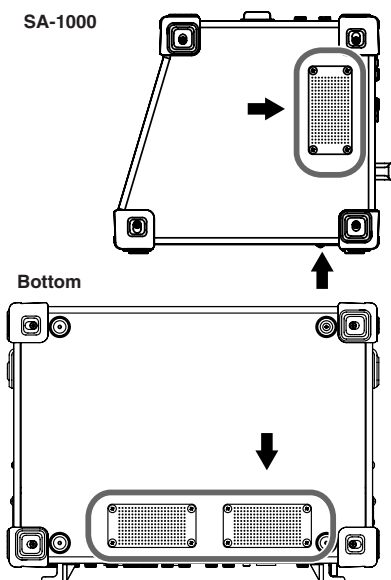
- This unit, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level, or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should immediately stop using the unit, and consult an audiologist.

- Do not allow any objects (e.g., flammable material, coins, pins); or liquids of any kind (water, soft drinks, etc.) to penetrate the unit.

- Immediately turn the power off, remove the power cord from the outlet, and request servicing by your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page when:
 - The power-supply cord or the plug has been damaged; or
 - If smoke or unusual odor occurs
 - Objects have fallen into, or liquid has been spilled onto the unit; or
 - The unit has been exposed to rain (or otherwise has become wet); or
 - The unit does not appear to operate normally or exhibits a marked change in performance.

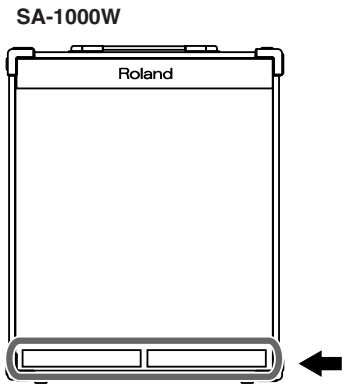
⚠ WARNING

- In households with small children, an adult should provide supervision until the child is capable of following all the rules essential for the safe operation of the unit. 
- Protect the unit from strong impact. (Do not drop it!) 
- Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/ampères) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through. 
- Before using the unit in a foreign country, consult with your retailer, the nearest Roland Service Center, or an authorized Roland distributor, as listed on the "Information" page. 
- Do not put anything that contains water (e.g., flower vases) on this unit. Also, avoid the use of insecticides, perfumes, alcohol, nail polish, spray cans, etc., near the unit. Swiftly wipe away any liquid that spills on the unit using a dry, soft cloth. 
- Do not insert hands, fingers, etc. into the openings in the unit. In particular, if the unit is to be used in households with small children, always provide adult supervision to ensure that children keep their hands and feet out of these openings. 













⚠ WARNING

- Do not insert hands, fingers, etc. into the openings in the unit. In particular, if the unit is to be used in households with small children, always provide adult supervision to ensure that children keep their hands and feet out of these openings.



⚠ CAUTION

- The unit should be located so that its location or position does not interfere with its proper ventilation. 
- Always grasp only the plug on the power-supply cord when plugging into, or unplugging from an outlet. 
- At regular intervals, you should unplug the power plug and clean it by using a dry cloth to wipe all dust and other accumulations away from its prongs. Also, disconnect the power plug from the power outlet whenever the unit is to remain unused for an extended period of time. Any accumulation of dust between the power plug and the power outlet can result in poor insulation and lead to fire. 
- Try to prevent cords and cables from becoming entangled. Also, all cords and cables should be placed so they are out of the reach of children. 
- Never climb on top of, nor place heavy objects on the unit. 
- Never handle the power cord or its plug with wet hands when plugging into, or unplugging from, an outlet. 
- Before moving the unit, disconnect the power plug from the outlet, and pull out all cords from external devices. 
- Before cleaning the unit, turn off the power and unplug the power cord from the outlet (p. 13). 
- Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet. 
- The cooling vents on either side of the unit may become hot, so take care to avoid burns. 

IMPORTANT NOTES

In addition to the items listed under “IMPORTANT SAFETY INSTRUCTIONS” and “USING THE UNIT SAFELY” on pages 2 and 3, please read and observe the following:

Power Supply

- Do not connect this unit to same electrical outlet that is being used by an electrical appliance that is controlled by an inverter (such as a refrigerator, washing machine, microwave oven, or air conditioner), or that contains a motor. Depending on the way in which the electrical appliance is used, power supply noise may cause this unit to malfunction or may produce audible noise. If it is not practical to use a separate electrical outlet, connect a power supply noise filter between this unit and the electrical outlet.
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.
- Although the LCD and LEDs are switched off when the POWER switch is switched off, this does not mean that the unit has been completely disconnected from the source of power. If you need to turn off the power completely, first turn off the POWER switch, then unplug the power cord from the power outlet. For this reason, the outlet into which you choose to connect the power cord's plug should be one that is within easy reach and readily accessible.

Placement

- Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.
- This device may interfere with radio and television reception. Do not use this device in the vicinity of such receivers.
- Noise may be produced if wireless communications devices, such as cell phones, are operated in the vicinity of this unit. Such noise could occur when receiving or initiating a call, or while conversing. Should you experience such problems, you should relocate such wireless devices so they are at a greater distance from this unit, or switch them off.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Excessive heat can deform or discolor the unit.
- Do not expose the unit to direct sunlight, place it near devices that radiate heat, leave it inside an enclosed vehicle, or otherwise subject it to temperature extremes. Also, do not allow lighting devices that normally are used while their light source is very close to the unit (such as a piano light), or powerful spotlights to shine upon the same area of the unit for extended periods of time. Excessive heat can deform or discolor the unit.
- When moved from one location to another where the temperature and/or humidity is very different, water droplets (condensation) may form inside the unit. Damage or malfunction may result if you attempt to use the unit in this condition. Therefore, before using the unit, you must allow it to stand for several hours, until the condensation has completely evaporated.
- Do not allow rubber, vinyl, or similar materials to remain on the unit for long periods of time. Such objects can discolor or otherwise harmfully affect the finish.
- Do not paste stickers, decals, or the like to this instrument. Peeling such matter off the instrument may damage the exterior finish.
- Depending on the material and temperature of the surface on which you place the unit, its rubber feet may discolor or mar the surface. You can place a piece of felt or cloth under the rubber feet to prevent this from happening. If you do so, please make sure that the unit will not slip or move accidentally.
- During operation, this device must be placed at a distance of no less than 20 cm from any walls.

IMPORTANT NOTES

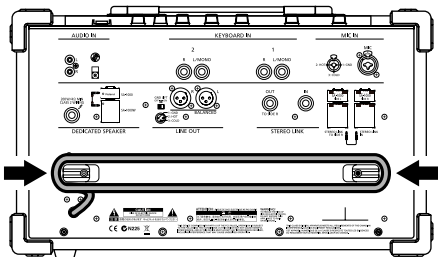
Maintenance

- To clean the unit, use a dry, soft cloth; or one that is slightly dampened. Try to wipe the entire surface using an equal amount of strength, moving the cloth along with the grain of the wood. Rubbing too hard in the same area can damage the finish.
- Never use benzine, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

Additional Precautions

- Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the unit during normal operation.
- To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.
- Some connection cables contain resistors. Do not use cables that incorporate resistors for connecting to this unit. The use of such cables can cause the sound level to be extremely low, or impossible to hear. For information on cable specifications, contact the manufacturer of the cable.
- Wrap the power cord around the cord hook when transporting or storing the unit.

SA-1000



Main Features

The SA-1000 is a combo amp that also functions as a 2.1-channel full stereo, lightweight, high-power stage amp.

Easy setup

Mixer, amp, and speakers are integrated in one unit, eliminating any need for complicated wiring. You can also connect a subwoofer unit with a single cable.

Fully reproduces the powerful, low-frequency sounds of an organ

Designed for high power, the SA-1000 outputs 350 watts (stereo: 75 W + 75 W, subwoofer: 200 W). This amp faithfully reproduces piano, organ, and other keyboard sounds. The SA-1000 also comes equipped with an "Organ Enhance" function.

Convert to a simple PA system with the Stereo Link function

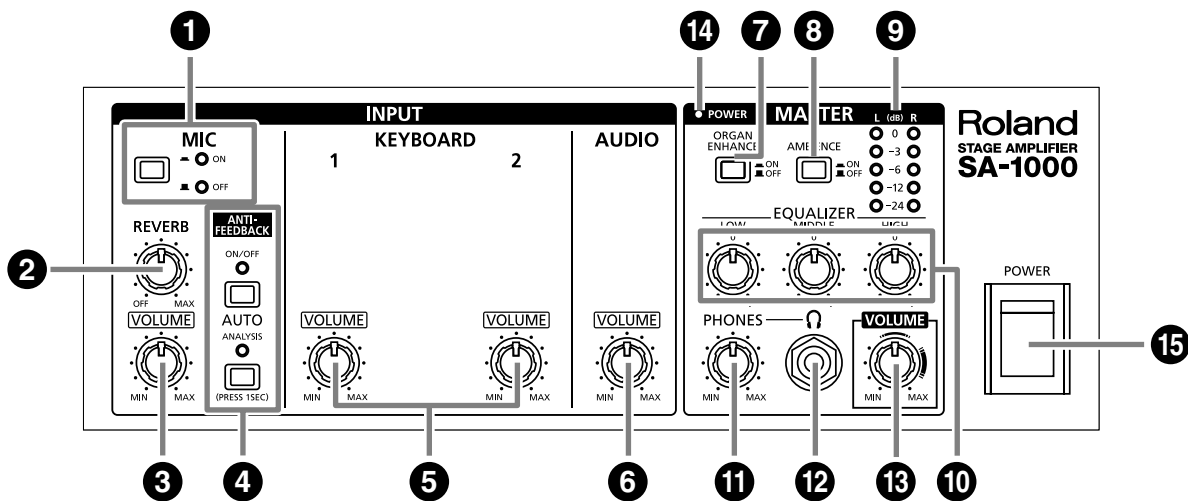
The unit features a Stereo Link function, which allows you to connect two SA-1000s and use each as an independent left or right stereo speaker. You can also use the SA-1000 as a PA system for small-scale concerts.

A full complement of input connections

In addition to two keyboard input systems, the unit also includes mic and line level device input connectors. For an artist who talks or sings during their piano or organ performance, an SA-1000 is all they need.

Names of Things and What They Do

Control Panel



MIC INPUT

1. MIC Button

When using the MIC IN input, press the MIC button. The ON indicator lights when MIC button is pressed.

2. REVERB Knob

This adjusts the amount of reverb applied to the mic input.

- * Set the knob to "OFF" when the reverb is not being used.
- * The reverb scale markings are approximate. Check the resulting sound as you adjust the amount of reverb applied.

3. VOLUME Knobs

This adjusts the volume levels of the MIC input.

- * To minimize noise as much as possible, we recommend turning the VOLUME knob for any channel not being used to 0 and setting MIC button to OFF.

4. ANTI-FEEDBACK

This automatically detects and eliminates acoustic feedback.

cf. →

For further instructions on how to use anti-feedback, refer to "About the Anti-Feedback Function" (p. 15)

ON/OFF Button

Press this button to turn the function on.

When switched on, the indicator lights, and the system automatically works to prevent sudden feedback, as well as feedback that occurs during quiet stretches.

AUTO Button

When the ON/OFF button is set to ON, holding down this button for one second or longer generates a calibration signal from the speakers. The microphone picks up the sound and the SA-1000 analyzes the characteristics of the microphone and the surroundings. Based on the results of this analysis, the microphone and environmental characteristics are compensated for automatically, making it difficult for feedback to crop up.

The indicator flashes while this automatic correction is in progress. When the process is completed, the indicator remains lit, signifying that the feedback prevention function is in effect.

KEYBOARD INPUT(1, 2)

5. VOLUME Knob

These adjust the volume of the devices connected to the KEYBOARD IN jacks.

AUDIO INPUT

6. VOLUME Knob

This adjusts the volume of the device connected to the AUDIO IN jack.

MASTER

7. ORGAN ENHANCE Button

This switches the Organ Enhance effect on and off. When switched on, the organ's low-frequency range will be emphasized. Switch this off when you've connected something other than an organ, such as a piano.

8. AMBIENCE Button

This switches the Ambience effect on and off. Switching this on produces a sound with greater breadth.

9. LEVEL Indicator

This indicates the MASTER output level.

10.EQUALIZER

The SA-1000 includes a 3-band equalizer.

LOW Knob

This adjusts the tone in the low-frequency range.

MIDDLE Knob

This adjusts the tone in the middle-frequency range.

HIGH Knob

This adjusts the tone in the high-frequency range.

11.PHONES Knob

This adjusts the headphone volume level.

12.Headphone Jack

Connect headphones here.

- * Be sure to turn the PHONES knob setting to 0 before connecting or disconnecting headphones.
- * Sounds from the SA-1000's speakers and LINE OUT are not muted even when headphones are connected.

13.VOLUME Knob

This adjusts the overall volume output from the SA-1000's speakers.

14.POWER Indicator

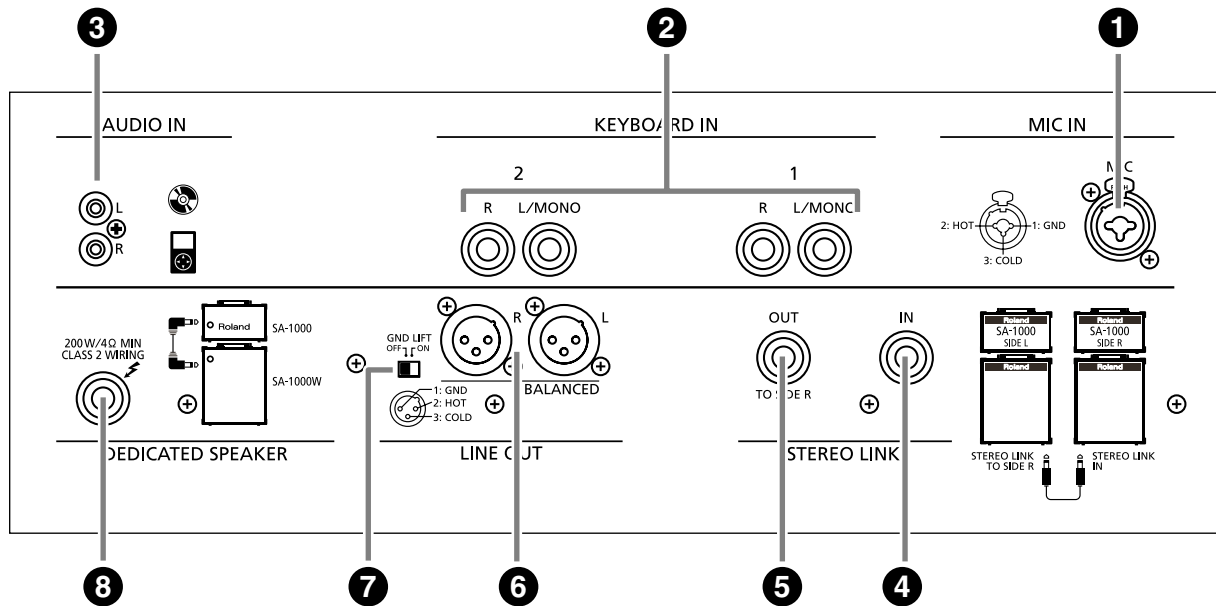
This lights to indicate that the SA-1000's power is on.

15.POWER Switch

This switches the power on and off.

- * Be sure to turn the MASTER VOLUME knob down to 0 whenever turning the power on or off.
- * This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.

Jack Panel

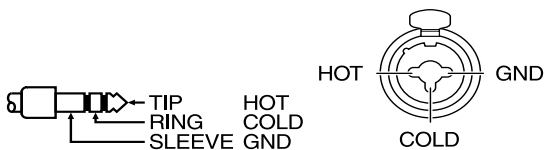


MIC INPUT

1. MIC IN Jack

Connect a microphone here. For balanced input, you can connect to the TRS 1/4-inch phone jacks and XLR type connector.

- This instrument is equipped with balanced (XLR/TRS) type jacks. Wiring diagrams for these jacks are shown below. Make connections after first checking the wiring diagrams of other equipment you intend to connect.



KEYBOARD INPUT(1, 2)

2. KEYBOARD IN 1, 2 Jack

Connect organs, keyboards, or other line level devices here.

These jacks accept stereo input; for mono input, use the left channel jacks. Line level input (-20 dBu) is supported.

AUDIO INPUT

3. AUDIO IN Jack

Connect a CD player or other line level device here. Inputs accept RCA phono type plugs.

STEREO LINK

After connecting two SA-1000s together with one or two audio cables (1/4-inch phone type), you can easily play back high power sounds (350 W + 350 W) in stereo.

4. STEREO LINK IN Jack

When using the Stereo Link function, input audio from the left channel SA-1000 here.

You can also use this as an external input jack for mono input.

0 dBu input level is supported.

5. STEREO LINK OUT Jack

This outputs audio to the right channel SA-1000 when the Stereo Link function is used.

When the STEREO LINK OUT jack is in use, the left channel audio is output in mono from the SA-1000's speakers.

Output level is 0 dBu.

* *Signals output from these jacks are not routed through the MASTER section (EQUALIZER, ORGAN ENHANCE, AMBIENCE, VOLUME).*

cf. ➔

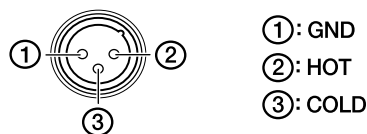
For further instructions on connecting with Stereo Link, refer to "About Stereo Link" (p. 14).

LINE OUT

6. LINE OUT Connectors

These are XLR type connectors for balanced output (left and right stereo output).

Connect a mixer, recording device, or other equipment here. Rated output level is +4 dBu.



7. GND LIFT Switch

Using external equipment connected to the LINE OUT connectors may result in generation of the "hum" of loop ground noise. If this occurs, you may be able to mitigate the problem by sliding this switch. Normally, this is set to "OFF."

ON: Pin 1 is disconnected from the SA-1000's ground.

OFF: Pin 1 is connected to the SA-1000's ground.

SPEAKER

8. DEDICATED SPEAKER Jack

Use this jack to output sounds to the SA-1000W subwoofer.

Use the special connection cable included with the unit to connect to the SA-1000W's INPUT jack. This provides powerful low end to the sound.

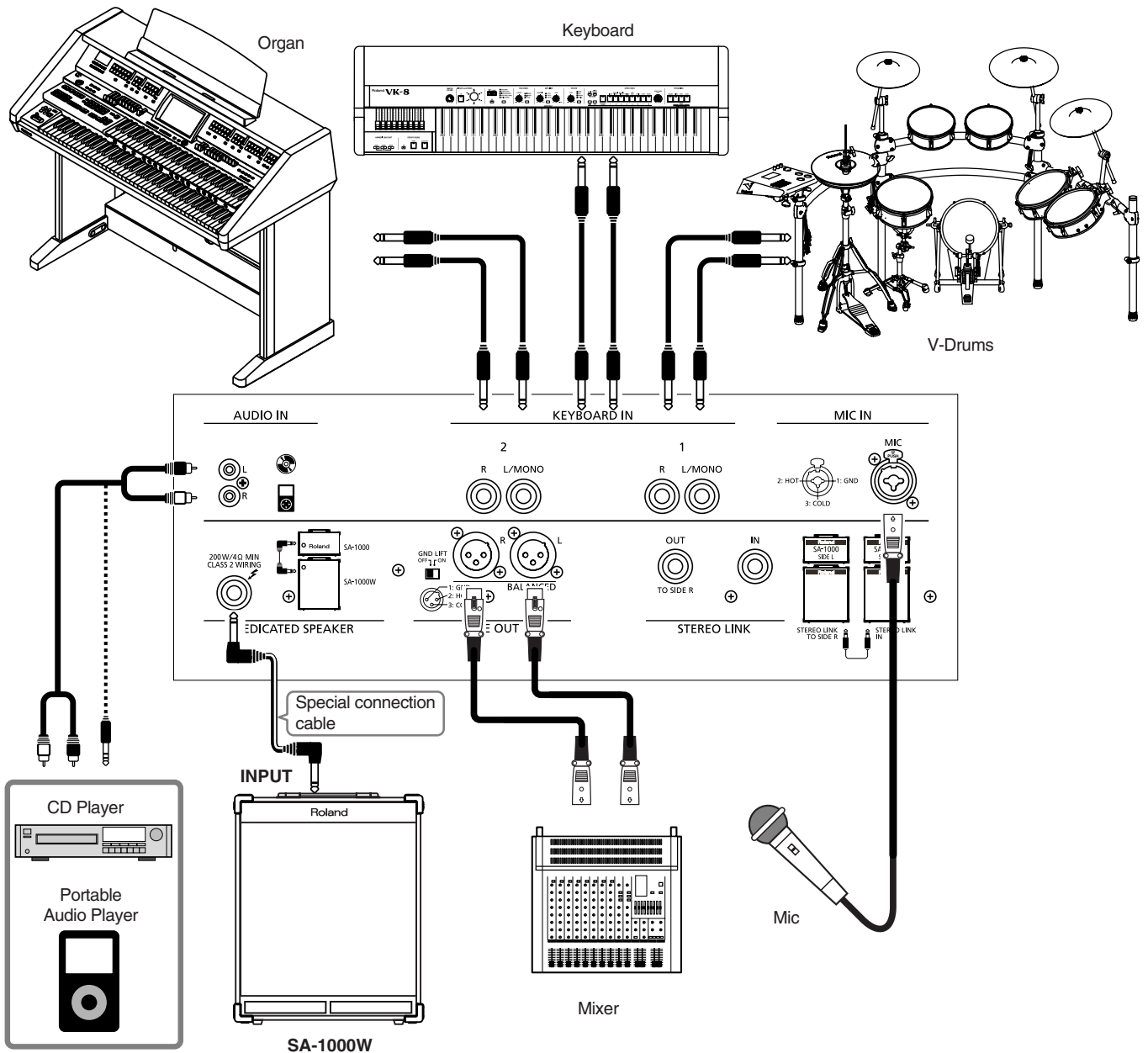
* *Turn off the power on the SA-1000 before connecting or disconnecting cable.*

NOTE

- Connect only the SA-1000W. Never connect any other equipment.
- Be sure to use only the connection cable included with the unit to connect the subwoofer. Do not use ordinary audio cables.

Making the Connections

Refer to the figure shown below to connect the SA-1000 and the other equipment.



- * To prevent malfunction and/or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.
- * When connection cables with resistors are used, the volume level of equipment connected to the inputs (MIC IN, KEYBOARD IN, AUDIO IN) may be low. If this happens, use connection cables that do not contain resistors.
- * Before making any connections, set the SA-1000's MASTER VOLUME knob to "0."

NOTE

- Connect only the SA-1000W with the DEDICATED SPEAKER juck of SA-1000. Never connect any other equipment.
- Be sure to use only the connection cable included with the unit to connect the SA-1000W. Do not use ordinary audio cables.

Switching the Power On and Off

* *Once the connections have been completed (p. 12), turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.*

- 1. Make sure that all volume controls on the SA-1000 and connected devices are set to 0.**
- 2. Turn on all the devices connected to the SA-1000's input jacks.**
- 3. Turn on the SA-1000.**
- 4. Switch on any equipment connected to the SA-1000's LINE OUT jacks.**
- 5. Adjust the volume levels for the devices.**
- 6. Before switching off the power, lower the volume on each of the devices in your system and then Turn Off the devices in the reverse order to which they were switched on.**

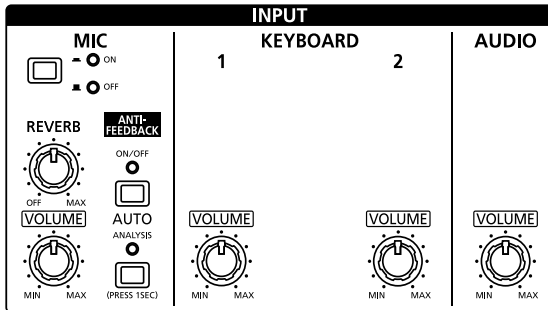
* *This unit is equipped with a protection circuit. A brief interval (a few seconds) after power up is required before the unit will operate normally.*

* *If you need to turn off the power completely, first turn off the POWER switch, then unplug the power cord from the power outlet. Refer to "Power Supply" (p. 5).*

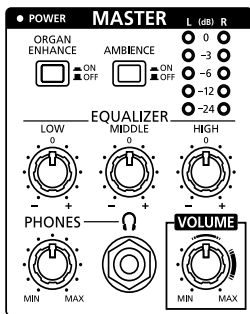
* *Even with the volume all the way down, you may still hear some sound when the power is switched on, but this is normal, and does not indicate a malfunction.*

About Setting the Volume

To obtain the best sound from the SA-1000, set the volume level using the following procedure.



1. When using the MIC IN input, press the MIC button.
2. Adjust the MIC REVERB knob to achieve the desired sound.
3. Turn the VOLUME knob for each input to adjust the input volume levels.
 - * If the sound is distorted (when the LEVEL indicator lights at 0 dB), adjust the input VOLUME knobs or the volume levels of the devices connected to the inputs.
 - At this point, adjust the levels to achieve a balance in volume for each input.



4. Use the EQUALIZER knobs (LOW/MIDDLE/HIGH), ORGAN ENHANCE button, and AMBIENCE button to adjust the tone to your liking.
5. Use the MASTER VOLUME knob to adjust the overall volume level.
6. Set up the ANTI-FEEDBACK if necessary. (p. 15)

About Stereo Link

You can connect two SA-1000s with one audio cable (1/4" phone type) for high-power stereo sound (350 watts per channel).

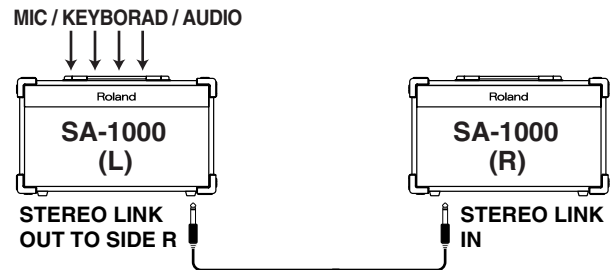
This function is called "Stereo Link."

The SA-1000's mixer function is stereo compatible, allowing you to output the right channel signals from the STEREO LINK OUT jack.

This lets you play sounds in stereo, as shown below.

Connection

Up to four input devices can be connected.



Operation

1. Connect the devices to the SA-1000 (L).
2. Connect the STEREO LINK OUT R jack on the SA-1000 (L) and the STEREO LINK IN jack on the SA-1000 (R).
3. Turn on both SA-1000 (L) and SA-1000 (R).
4. Adjust the volume levels on all devices.
5. Adjust the SA-1000 (L) and SA-1000 (R) volume levels separately using their MASTER VOLUME knobs.

About the Volume and Tone Settings

Adjust the R and L volume levels separately using their MASTER VOLUME knobs.

You can adjust the EQUALIZER (LOW/MIDDLE/HIGH knobs), ORGAN ENHANCE, and AMBIENCE independently for the L and R sides.

Basically, they should be set to the same positions, but you can adjust each one as necessary to suit the needs of a particular setup.

About the Anti-Feedback Function

Features of SA-1000 ANTI-FEEDBACK

Many previous anti-feedback systems use methods of determining feedback that actually generate feedback in order to detect the feedback point, resulting in a system that is extremely unpleasant to use.

On the other hand, the SA-1000 employs a newly developed method that does not require generation of feedback, but instead uses a microphone to capture a calibration signal output from the SA-1000's own speakers, then performs a feedback analysis to estimate the feedback point.

■ What is Acoustic Feedback

When sounds output by speakers reenter a microphone, they end up being output from the speakers at even greater volume, and as this cycle is repeated, an unpleasant and uncomfortable oscillating sound is created.

Pointing microphones towards speakers or placing them near the speakers allows the amplified sounds from the speakers to enter the microphones again, thus making it even easier for feedback to arise.

■ To Avoid Feedback

In general, avoiding feedback requires the following measures:

- Setting output levels so they're appropriate for the particular site or room
- Setting connected devices to suitable levels
- Keeping microphones and speakers as distant from each other as possible, and avoiding placing microphones such that they are pointed directly at the speakers.

These methods will allow you to suppress the most serious types of feedback.

In actuality, however, feedback can still occur as you attempt to achieve necessary output levels, while on the other hand, moving speakers away to avoid causing feedback can end up making the sound difficult to hear.

■ Reducing Acoustic Feedback with the SA-1000 (Anti-Feedback)

The SA-1000 includes the following three built-in functions, which allow you to achieve an acoustically stable system that automatically controls the occurrence of feedback and makes it more difficult for feedback to arise.

Dynamic Function

1 Suppresses feedback that occurs at times when there is no sound from the microphone.

For feedback generated when no audio is being input via the microphone (for example, at times when the performer is not at the microphone), the feedback point is automatically detected and the feedback is cut with a dedicated filter.

2 Prevents sudden feedback that occurs when the microphone is in use.

This system automatically cuts out feedback that crops up suddenly due to changes in the surroundings or movement of the microphone, using an extremely narrow filter to minimize alterations in the sound quality.

Safety Margin Function

3 Conditions are calibrated automatically to help prevent feedback.

Frequencies prone to feedback will change depending on the microphones used, the placement of the SA-1000 (speakers), and the SA-1000's output level settings.

The SA-1000 measures conditions first to detect these frequencies and secure a sufficient safety margin (i.e., an ample margin of gain before feedback starts to occur).

The entire process, from measurement to securing of the safety margin, takes only a few seconds.

The dedicated filter is optimally processed for each feedback point, resulting in an acoustically stable system that minimizes tonal changes.

Relationship Between Anti-Feedback Functions and Buttons

ON/OFF Button: Switches Dynamic function on and off

AUTO Button: Activates the Safety Margin function

■ About Speaker and Mic Placement

Conventional PA systems generally require performers using mics to stand behind speakers to avoid feedback. This makes it difficult to hear the sound from the speakers, making comfortable monitoring impossible.

The SA-1000's internal anti-feedback system suppresses feedback, allowing performers to monitor the sound in comfort, even when standing in front of the speakers.

- Howling could be produced depending on the location of microphones relative to speakers. This can be remedied by:
 1. Changing the orientation of the microphone(s).
 2. Relocating microphone(s) at a greater distance from speakers.
 3. Lowering volume levels.

How to Use Anti-Feedback

Anti-feedback is enabled only for MIC input.

When Using a Mic Stand

Both the mic characteristics and the characteristics of the surrounding environment can be compensated for.

1. **Set up and connect the SA-1000 and the mic.**
 - Set up the SA-1000 and the mic in the positions they will be used.
 - Adjust the height of the mic stand and the angle of the mic.
 - Set the SA-1000's VOLUME knob to the level actually to be used in performance.
2. **Press the ANTI-FEEDBACK ON/OFF button so its indicator is lit.**
3. **Hold down the ANTI-FEEDBACK AUTO button for at least one second.**

The indicator flashes, and the sound of the calibration signal is output from the speaker.

The calibration signal is set automatically in accordance with the mic position and volume setting.

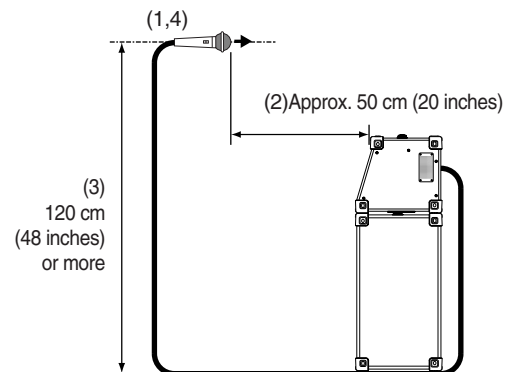
- * *Be aware that the sound output is relatively loud.*
- * *To increase measurement accuracy, keep the surroundings as quiet as possible.*

When measurement and analysis are finished and the feedback prevention processing is completed, the indicator stops flashing and remains lit.

When Using a Handheld Mic

Only the mic conditions can be corrected.

1. **Press the ANTI-FEEDBACK ON/OFF button so its indicator is lit.**
2. **Set up and connect the SA-1000 and the mic.**
 - Set the SA-1000's VOLUME knob to the level actually to be used in performance.
 - To accurately measure the mic characteristics, keep the mic, whether held by hand or mounted on a stand, fixed in the position shown below. To setting up the mic position, please be careful of feedback.
 - (1) Angle: Directly facing the front of the SA-1000
 - (2) Distance: Approx. 50 cm (20 inches)
 - (3) Height: 120 cm (48 inches) or more (Height during actual use)
 - (4) Mic Direction: Level and directed at the SA-1000



3. **Hold down the ANTI-FEEDBACK AUTO button for at least one second.**

The indicator flashes, and the sound of the calibration signal is output from the speaker.

The calibration signal is set automatically in accordance with the position of the mic and the volume setting.

- * *Take care not to stand between or leave any object obstructing the space between the mic and the SA-1000.*
- * *To increase measurement accuracy, keep the surroundings as quiet as possible.*

When measurement and analysis are finished and the feedback prevention processing is completed, the indicator stops flashing and remains lit.

When automatic measurement is not completed

- If you press the AUTO button to start the calibration without a microphone connected or with the volume level turned down too low, SA-1000 outputs an error sound from the speaker and stops analysis. If this occurs, check your connections and settings.
- If the surrounding noise level is too loud or the microphone position is too far, SA-1000 outputs an error sound from the speaker and stops analysis. If this occurs, the ANALYSIS indicator light goes off.

NOTE

- If you press the ON/OFF button while the ANALYSIS indicator is lit, the indicator light goes off, and the anti-feedback function is switched off. The results of the correction process are stored in memory, though, so turning the function on again returns the function to its previous status. However, turning off the power clears the results of the correction.
- SA-1000 does not respond to panel operations while in ANALYSIS calibration. It responds after the calibration is completed.
- Anti-feedback does not work for AUDIO and KEYBOARD input.
- The sound quality is altered somewhat while the anti-feedback is operational.
- With some settings, feedback may not be suppressed, even after you have run the anti-feedback process with the AUTO button.

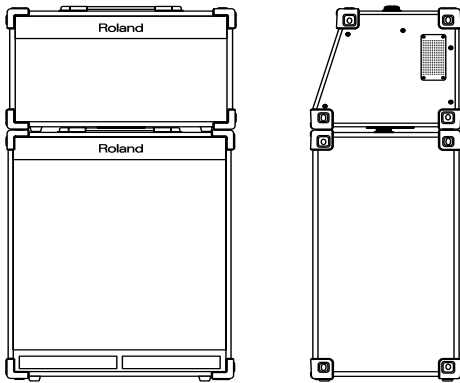
About the Use of Stacks



When stacking, be sure to follow the instructions below.

- Be sure to set up and use these units in stable, level locations.
- Be careful not to get your fingers pinched.

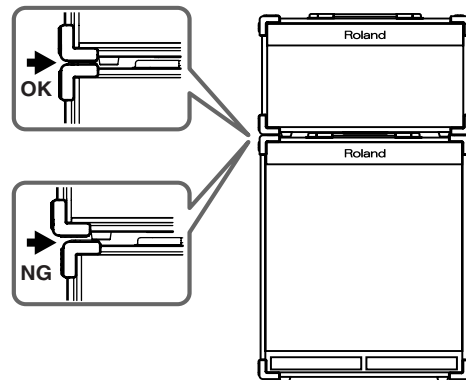
- Stack so that the speaker side of both the top cabinet and the bottom cabinet face the same direction.



- Adjust the horizontal position of the top cabinet so that the corner protectors are properly engaged and locked at all four corners between the top and bottom cabinets.

Do not use the amplifiers without proper corner protector engagement. Otherwise, you risk having the top cabinet tumble down.

Always make sure that the corners are properly engaged before you use the amplifiers.



About the Protection Circuit

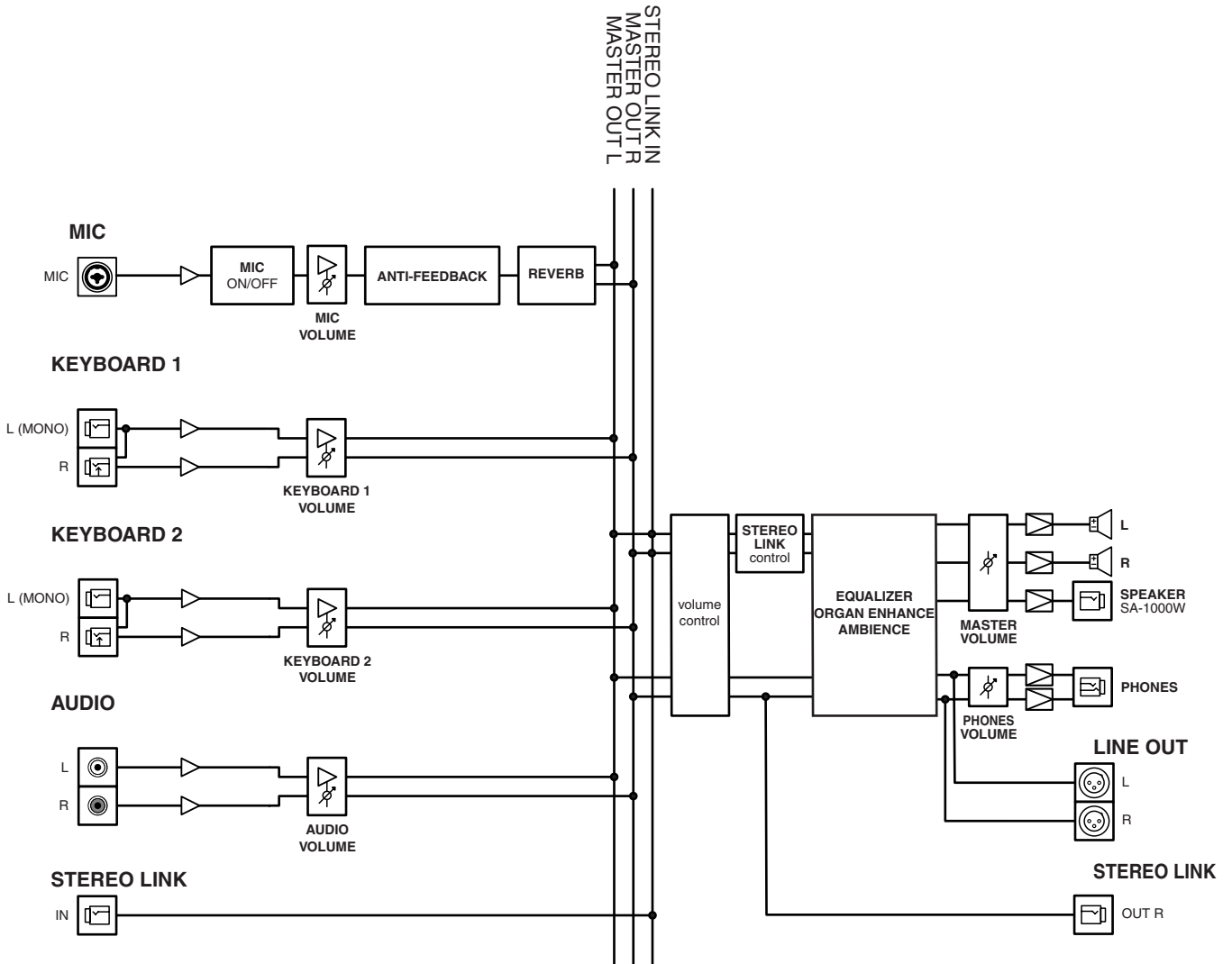
This unit is equipped with a protection circuit.

The protection circuit helps ensure safety by activating when excessive input continues for a long time while the device is at a location with a high ambient temperature.

When the protection circuit is active, the MIC ON and the MIC OFF indicators flash, and the sound output drops in volume or ceases altogether.

Position this device away from walls or other objects so that the vents remain unobstructed, thus preventing the activation of the protection circuit.

Block Diagram



Main Specifications

SA-1000

● Rated Power Output

350 W (75 W x 2 + SUBWOOFER 200 W)

● Nominal Input Level (1 kHz)

INPUT (MIC): -50 dBu

INPUT (PHONE): -20 dBu

INPUT (RCA): -20 dBu

STEREO LINK INPUT: 0 dBu

● Nominal Output Level (1 kHz)

BALANCED OUT: +4 dBu

STEREO LINK OUTPUT: 0 dBu

* 0 dBu = 0.775 Vrms

● Speakers

16 cm + Tweeter (Coaxial, 2-way) x 2

6.5 inches + Tweeter (Coaxial, 2-way) x 2

● Controls

[Input Controls]

MIC

MIC Button (ON/OFF)

Input VOLUME Knob

REVERB Knob

ANTI-FEEDBACK Button (ON/OFF)

ANTI-FEEDBACK AUTO Button

KEYBOARD 1, 2

Input VOLUME Knob

AUDIO

Input VOLUME Knob

[Master Controls]

Equalizer

LOW Knob

MIDDLE Knob

HIGH Knob

ORGAN ENHANCE Button

AMBIENCE Button

MASTER VOLUME Knob

PHONES VOLUME Knob

POWER Switch

GND LIFT Switch

● Indicators

MIC ON/MIC OFF

ANTI-FEEDBACK ON/OFF

ANTI-FEEDBACK AUTO

LEVEL METER

POWER

● Connectors

MIC

MIC INPUT Jacks (XLR type, 1/4" TRS phone type)

KEYBOARD 1, 2

LINE INPUT Jacks (L/MONO, R) (1/4" phone type)

AUDIO

LINE INPUT Jacks (L, R) (RCA phono type)

Output

LINE OUTPUT Jacks (L, R) (XLR type)

Stereo Link

STEREO LINK IN Jack (1/4" phone type)

STEREO LINK OUT Jacks (R) (1/4" phone type)

Others

PHONES Jack (Stereo 1/4" phone type)

SUBWOOFER OUT Jack (1/4" phone type)

● Power Supply

AC 117 V, AC 220 V, AC 230 V, AC 240 V (50/60 Hz)

● Power Consumption

94 W

● Dimensions

456 (W) x 343 (D) x 297 (H) mm

18 (W) x 13-9/16 (D) x 11-3/4 (H) inches

● Weight

11.5 kg / 25 lbs 6 oz

SA-1000W (SUBWOOFER)

- **Speaker**

30 cm / 12 inches

- **Nominal Impedance**

4 ohms

- **Connection**

INPUT Jack (1/4" phone type)

- **Dimensions**

456 (W) x 325 (D) x 560 (H) mm

18 (W) x 12-13/16 (D) x 22-1/16 (H) inches

- **Weight**

11.5 kg / 25 lbs 6 oz

- **Accessories**

Owner's Manual

Speaker Connection Cable

Connection Manual

* In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.

For EU Countries



- UK** This symbol indicates that in EU countries, this product must be collected separately from household waste, as defined in each region. Products bearing this symbol must not be discarded together with household waste.
- DE** Dieses Symbol bedeutet, dass dieses Produkt in EU-Ländern getrennt vom Hausmüll gesammelt werden muss gemäß den regionalen Bestimmungen. Mit diesem Symbol gekennzeichnete Produkte dürfen nicht zusammen mit dem Hausmüll entsorgt werden.
- FR** Ce symbole indique que dans les pays de l'Union européenne, ce produit doit être collecté séparément des ordures ménagères selon les directives en vigueur dans chacun de ces pays. Les produits portant ce symbole ne doivent pas être mis au rebut avec les ordures ménagères.
- IT** Questo simbolo indica che nei paesi della Comunità europea questo prodotto deve essere smaltito separatamente dai normali rifiuti domestici, secondo la legislazione in vigore in ciascun paese. I prodotti che riportano questo simbolo non devono essere smaltiti insieme ai rifiuti domestici. Ai sensi dell'art. 13 del D.Lgs. 25 luglio 2005 n. 151.
- ES** Este símbolo indica que en los países de la Unión Europea este producto debe recogerse aparte de los residuos domésticos, tal como este regulado en cada zona. Los productos con este símbolo no se deben depositar con los residuos domésticos.
- PT** Este símbolo indica que nos países da UE, a recolha deste produto deverá ser feita separadamente do lixo doméstico, de acordo com os regulamentos de cada região. Os produtos que apresentem este símbolo não deverão ser eliminados juntamente com o lixo doméstico.
- NL** Dit symbool geeft aan dat in landen van de EU dit product gescheiden van huishoudelijk afval moet worden aangeboden, zoals bepaald per gemeente of regio. Producten die van dit symbool zijn voorzien, mogen niet samen met huishoudelijk afval worden verwijderd.
- DK** Dette symbol angiver, at i EU-lande skal dette produkt opsamlles adskilt fra husholdningsaffald, som defineret i hver enkelt region. Produkter med dette symbol må ikke smides ud sammen med husholdningsaffald.
- NO** Dette symbolet indikerer at produktet må behandles som spesialavfall i EU-land, iht. til retningslinjer for den enkelte regionen, og ikke kastes sammen med vanlig husholdningsavfall. Produkter som er merket med dette symbolet, må ikke kastes sammen med vanlig husholdningsavfall.

- SE** Symbolen anger att i EU-länder måste den här produkten kasseras separat från hushållsavfall, i enlighet med varje regions bestämmelser. Produkter med den här symbolen får inte kasseras tillsammans med hushållsavfall.
- FI** Tämä merkintä ilmaisee, että tuote on EU-maissa kerättävä erillään kotitalousjätteistä kunkin alueen voimassa olevien määräysten mukaisesti. Tällä merkinnällä varustettuja tuotteita ei saa hävittää kotitalousjätteiden mukana.
- HU** Ez a szimbólum azt jelenti, hogy az Európai Unióban ezt a terméket a háztartási hulladéktól elkülönítve, az adott régióban érvényes szabályozás szerint kell gyűjteni. Az ezzel a szimbóllummal ellátott termékeket nem szabad a háztartási hulladék közé dobni.
- PL** Symbol oznacza, że zgodnie z regulacjami w odpowiednim regionie, w krajach UE produktu nie należy wyrzucać z odpadami domowymi. Produktów opatrzonych tym symbolem nie można utylizować razem z odpadami domowymi.
- CZ** Tento symbol udává, že v zemích EU musí být tento výrobek sbírán odděleně od domácího odpadu, jak je určeno pro každý region. Výrobky nesoucí tento symbol se nesmí vyhazovat spolu s domácím odpadem.
- SK** Tento symbol vyjadruje, že v krajinách EÚ sa musí zber tohto produktu vykonávať oddelene od domového odpadu, podľa nariadení platných v konkrétnej krajine. Produkty s týmto symbolom sa nesmú vyhazovať spolu s domovým odpadom.
- EE** See sümbol näitab, et EL-i maades tuleb see toode olemprügist eraldi koguda, nii nagu on igas piirkonnas määratletud. Selle sümboliga märgitud tooteid ei tohi ära visata koos olmeprügiga.
- LT** Šis simbolis rodo, kad ES šalyse šis produktas turi būti surenkamas atskirai nuo buitinių atliekų, kaip nustatyta kiekviename regione. Šiuo simboliu paženklinėti produktai neturi būti išmetami kartu su buitiniems atliekoms.
- LV** Šis simbols norāda, ka ES valstīs šo produktu jāievāc atsevišķi no mājsaimniecības atkritumiem, kā noteikts katrā reģionā. Produkts ar šo simbolu nedrīkst izmest kopā ar mājsaimniecības atkritumiem.
- SI** Ta simbol označuje, da je treba proizvod v državah EU zbirati ločeno od gospodinskih odpadkov, tako kot je določeno v vsaki regiji. Proizvoda s tem znakom ni dovoljeno odlagati skupaj z gospodinskimi odpadki.
- GR** Το σύμβολο αυτό υποδηλώνει ότι στις χώρες της Ε.Ε. το συγκεκριμένο προϊόν πρέπει να συλλέγεται χωριστά από τα υπόλοιπα οικιακά απορρίμματα, σύμφωνα με όσα προβλέπονται σε κάθε περιοχή. Τα προϊόντα που φέρουν το συγκεκριμένο σύμβολο δεν πρέπει να απορρίπτονται μαζί με τα οικιακά απορρίμματα.

For China

有关产品中所含有害物质的说明

本资料就本公司产品中所含的特定有害物质及其安全性予以说明。
本资料适用于 2007 年 3 月 1 日以后本公司所制造的产品。

环保使用期限



此标志适用于在中国国内销售的电子信息产品，表示环保使用期限的年限。所谓环保使用期限是指在自制造日期的规定期限内，产品中所含的有害物质不致引起环境污染，不会对人身、财产造成严重的不良影响。
环保使用期限仅在遵照产品使用说明书，正确使用产品的条件下才有效。
不当的使用，将会导致有害物质泄漏的危险。

产品中有毒有害物质或元素的名称及含量

部件名称	有毒有害物质或元素					
	铅(Pb)	汞(Hg)	镉(Cd)	六价铬(Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
外壳(壳体)	×	○	○	○	○	○
电子部件(印刷电路板等)	×	○	×	○	○	○
附件(电源线、交流适配器等)	×	○	○	○	○	○

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
×：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。
因根据现有的技术水平，还没有什么物质能够代替它。

For EU Countries



This product complies with the requirements of European Directives EMC 89/336/EEC and LVD 73/23/EEC.

For the USA

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Unauthorized changes or modification to this system can void the users authority to operate this equipment.
This equipment requires shielded interface cables in order to meet FCC class B Limit.

For Canada

NOTICE

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

AVIS

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

